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TELECOMMUNICATIONS POLICY,
RESEARCH AND DEVELOPMENT

No. 234

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19 August 1982

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TELECOMMUNICATIONS POLICY, RESEARCH AND DEVELOPMENT**

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PEOPLE'S REPUBLIC OF CHINA

EFFORTS MADE TO MODERNIZE SATELLITE, TELEPHONE SYSTEMS

Paris REVUE FRANCAISE DE TELECOMMUNICATIONS in French Apr 82 pp 26-33

[Article by Genevieve Van Gaver: "The Chinese Challenge"]

[Text] For the Chinese, all the problems posed are subordinate to the great question of how they can get their immense country (9.56 million km²--18 times the size of France), which will have a population of 1.23 billion at the end of the 20th century, to the industrial stage as quickly as possible.

Obviously, telecommunications can help China win this battle. And despite certain difficulties and disappointments, the French manufacturers still stand a very good chance of cooperating with China in setting up a modern telephone network--if they can show tenacity.

Geographically, distribution is very unequal: the telephone is found essentially in the cities. The number of lines is estimated at 20,000 per million inhabitants in the urban milieu--i.e., 2 lines per 100 inhabitants--and the traffic is mainly intraurban. If one compares the telephone density of the cities with the figure for their population (150 million), one notes that 20 percent of the Chinese use 3 million lines, and there are only 1.18 million lines for 750 or 850 million persons. Telephone usage, however, is far less intensive than in the developed countries.

The reasons for this underdevelopment are diverse. The one most often cited is that extension and modernization of the network have not been considered priority tasks; the Ministry of PT [Posts and Telecommunications] therefore was not an important one and consequently had few credits at its disposal, in contrast with the Fourth Ministry (Machine Building), which, for its part, came under the Military Affairs Commission. Furthermore, no mention was made of telecommunications in the 5-year plans. Moreover, under Mao the country was trying mainly to develop heavy industry and carried out a policy of big works projects.

It seems that the present governors have a different approach to the problem. Starting in 1981, China has reoriented its economy and admits that errors had been made in the last 30 years. On the occasion of his visit to Brussels for

the EEC-China events in March 1981, Mr Gumu, vice prime minister and chairman of the big import-export corporation and the foreign-investment corporation, stressed for the first time the necessity of modernizing telecommunications.

Emphasis is currently being placed on development of the network of certain coastal provinces, zones and cities. The present policy further grants a portion of autonomy to the enterprises, manifested by the possibility of planning their activities themselves, having the use of a part of their funds, and managing their stocks.

China has not, of course, considered it advisable until now to develop telecommunications, but the situation is evolving. Because of limited financial means, it has been decided not to do any ineffective "sprinkling" but rather to concentrate the telecommunications facilities to the maximum in several poles of development chosen for opening up to the outside: the provinces of Quangdong and Fujian, and more particularly, the special economic zones of Shenzhen, Zhuhai, Shantou and Xiamen. If the experience is successful, they will serve as an example and, by means of their exporting industries, will furnish the foreign exchange that will make it possible to pull the rest of the country onto the road of modernization.

At present, there are few reliable statistics available on telecommunications in China. Nonetheless, the configuration and capacity of various networks is known.

The Telephone in China

In recent years, the most important achievement in the area of the telephone has been the placing in service, on the national level, of two modern systems for long-distance communication, one using radio relays and the other, coaxial cables.

Twenty-six provincial capitals are linked to Peking by radio beams, especially for transmission of television programs and press facsimile. A few radio links are used for telephony; thus, the Peking long-distance central telephone exchange, which also serves as an international transit center, has a 60-channel link and another one with 600 channels.

According to the official Chinese sources, the radio-beam network is estimated at 500,000 circuit-kilometers and the underground-cable network at 1.8 million circuit-kilometers; but an extension of the radio-beam network (or a domestic satellite program) is envisioned for linking Peking with the isolated and sparsely populated regions of the north and west of the country.

In the northeast of China, there is a coaxial-cable system of 1,700 kilometers, which has 1,800 channels and backs up certain radio links. It is deployed in only eight provinces and links Peking with Tianjin, Jinan, Shanghai and Hangzhou. There is also a 180-channel underwater coaxial cable between Tianjin and Dalian (formerly Port Arthur).

In toto, the interurban network has 22,000 circuits, 2,300 of which are automatic and semiautomatic.

Essentially, the traffic is switched manually, but a few links from Peking are automated or semiautomated.

Automation is under way. There is even talk of the possibility of the users in the provinces linked by coaxial cable being able to dial a number directly and reach it in 10 seconds.

In 1980, there were 210 million communications on the long-distance lines.

In the big cities, there are about 3,000 local self-switching installations of 1,000 to 1,500 lines each.

It should be noted that the urban telephone lines, though optimized, are heavily overloaded.

As regards the telegraph, it is little-developed in the interior of the country because of the difficulties raised by Chinese writing, which makes it necessary to use a code system. For traffic with the outside, the English language is used. The network is composed of 9,100 circuits.

To facilitate the expansion of contacts with foreign countries, the international communications capacities have been strongly improved since the beginning of the 1970's. In 1980, the international traffic was 1.73 million telegrams (as compared with 146 million messages sent inside the country in the same year); and telephone communications totaled 13 billion minutes. The country has 300 telegraph circuits and 200 telephone circuits, by either satellite, cable or radio.

China is linked directly to 31 countries and has interconnections with the rest of the world except for South Korea, Israel and South Africa.

Since 1972, the People's Republic of China has communicated with the outside via Intelsat. Three standard-A ground stations, two of which are situated near Peking and one near Shanghai, work through satellites of both the Pacific Ocean and the Indian Ocean.

An underground coaxial cable 180 km long and linking Guangdong with Hong Kong has been in service since 1974. It provides 300 high-quality 2-channel circuits, usable for telegraph, telephone, telex, data and facsimile transmission.

An underwater cable links Nan Hui, in the Shanghai region, with Kyushu in southern Japan.

According to official Chinese sources, telex exists in 14 cities of China. In 1979, it became automatic from Peking. There are nearly 1,000 subscribers at present.

As regards production, Chinese policy consists mainly in "counting on its own forces" and manufacturing as much as possible at home (see section below). Nevertheless, since they cannot produce sophisticated equipment yet, the Chinese have to resolve to bring it in from foreign countries.

International Relations

The telecommunications materiel imported in recent years has consisted almost solely of satellite-communications equipment from the United States, communications systems for navigation and air-traffic control (from France and Great Britain), and line-operating equipment (from Japan, because it laid underwater coaxial cable). Japan and the FRG have also furnished a wide range of equipment, generally in small lots--for example, 114 private switching installations imported from Japan between 1973 and 1975. These small quantities lead one to think that the Chinese consider them as samples or prototypes and are using them in the priority sectors. When demand has grown sufficiently and more are needed, the Chinese will set to making them themselves.

It would seem that China has decided to apply to the United States to set up its national network for remote broadcasting via satellite, which would comprise 1,000 or 2,000 ground receiving stations; when the project was initiated, 60,000 receiving stations were planned, but there has been a "readjustment." Furthermore, NASA has reserved spaces for these Chinese remote-broadcasting satellites on two flights of the space shuttle. But it will probably take another 3 or 4 years for the network to be set up.

To the extent that China's foreign trade depends on developing, it is obvious that the rate at which international circuits are placed in service between China and foreign countries proceeds is destined to grow rapidly; the two circuits installed between China and the United States in September 1978 had already risen to 10 by the end of 1979!

The Chinese leaders are aware of their lag. Large sums have been spent in the last few years to improve the national network and communications with the outside. But the radio-beam and coaxial-cable networks still do not cover the entire country. And even so, it will be necessary, in order to make full use of the potential of these circuits, to continue equipping them with modern modulation, multiplexing and switching materiel: it is improbable that the Chinese would have set up such technically advanced transmission arteries if they were planning to make use of only a small part of their capacity.

Relations Between Administrations

Chinese telecommunications come under the Ministry of Posts and Telecommunications, with which the French administration maintains close and particularly friendly relations. They began in 1971 on the occasion of the visit to France of Mr Zhong Fuxiang, then general director of telecommunications, and later minister, until September 1978. This first contact was followed by many exchanges, the most notable of which were conducted at the level of the ministers and the general directors. These events, in which the French manufacturers of telecommunications equipment took an extensive part, enabled the Chinese PT to acquire good knowledge of our potential in this area. Their attention was attracted by our experience of rapid development and by our efforts to catch up on the lag in our telephone network: China was confronted with similar problems, intensified by the size of the country.

Thanks to these regular contacts, a climate of confidence is established between the two administrations--a decisive factor for succeeding in China. Furthermore, our credibility was increased by the complete success of the Transpac demonstration in Peking in July 1979. The Chinese demonstrated their confidence in us by signing a protocol of cooperation on 4 October 1979--the only agreement signed with a foreign PT ministry.

The French Ministry of Posts and Telecommunications also maintains relations with the Fourth Ministry: A convention of cooperation has been signed through the intermediary of the National Center for Telecommunications Studies (CNET), on the one hand, and on the other, the Chinese corporation for importation of electronic materiel; the object of this agreement is the creation of a center for research on the reliability and environmental testing of electronic devices in China.

This Fourth Ministry--a very powerful organism that controls 3,000 plants and many research centers--has financial means that are not available to the Ministry of PT: its functions are considered to have priority over those in telecommunications, since it comes under the Military Affairs Commission. Thus it was able, in 1981, to sign contracts with the French companies SEMS [expansion unknown], SAGEM [Company for General Application of Electricity and Mechanics] and Logabax, within the framework of an agreement, signed on 6 December 1978, on industrial cooperation in computer technology and electronics. At the present time, apart from a few limited transactions, the French industry has not been any more successful than others in establishing a position in the Chinese market.

Readjustment and New Policy

But the basic facts governing our trade relations with China were considerably modified as of August 1979, at which time the so-called "economic readjustment" policy was made official and intensified. From that time on, the Chinese PT had to procure for itself the means for financing its plants and equipment by establishing a balance between imports and exports within the ministry itself; cooperation with foreign countries therefore had to be in the form of strict compensation, which seemed particularly difficult in the area of telecommunications.

The blow was all the harder in that it came after the hopes of 1978, when each organism had magnificent modernization projects in mind. China did not realize at that time the immense difficulties with which it would be confronted: shortage of technicians, because of 10 years of Cultural Revolution, and also the insufficiency of financial means. Whence the decision on economic readjustment, recently extended to 1985.

In view of this situation, Franco-Chinese cooperation between the Directorate of Advanced Education in Telecommunications in France and the Institute of PT in Peking, signed [as published] in Paris on 13 November 1979, took concrete form mainly in the sector of education, by organizing teacher exchange and the receiving of Chinese students in the National Higher School of Telecommunications (ENST). The French administration is continuing its efforts by the send-

ing of experts and the receiving of trainees, mainly in the area of data transmission as well as the planning and management of telecommunications networks.

Will the First Be the Last?

Paradoxically, the fact that France developed its relations with the Chinese PT earlier than other Western countries, notably the United States, elicits a feeling of disappointment and bitterness among most of the French builders today. After receiving delegations, sending missions, taking part in expositions, and working up and writing proposals for several years, they figure that they have put out quite a bit of effort for very meager results. But this is the hard law of negotiations with China as it is in our day: in the recent past, it has sometimes taken 6 years of talks to sign a contract.

But this disenchantment, which is entirely understandable, unhappily comes at a moment when efforts should be redoubled, because China is really beginning to open outward and the competition there is more lively than ever. The Japanese in particular put on constant pressure, not hesitating to invest widely in the leasing or purchase of offices, in sales at a loss, in advantageous or even interest-free and very long-term loans, and not at all discouraged by the fact that they have concluded only one deal in switching equipment in 2 years: the sale of a Fetex 150 by Fujitsu to the PT of Fushun. During the same 2 years, Sweden managed to sell a single temporal Axe, made by Ericsson, to the city of Peking.

France has one trump card: by the signing of our protocol, the Chinese PT has committed itself to cooperating with us in the areas that they have chosen. It is up to us to be equal to the task.

Telecommunications, and switching in particular, are going to develop in the first place in the two southeast provinces of Guangdong and Fujian, then in the cities of Peking and Shanghai, where international communications have priority. The fact that the purchases are beginning in these two provinces, which are special economic zones and enjoy broad autonomy vis-a-vis Peking (in the telecommunications sector too) is a heavy handicap for the French exporters. The Peking ministry, which is favorable to France, does not get to put in its word when the administrations of those two provinces decide on purchases abroad, provided that the technical guidelines set by the ministry are adhered to. We also had experience of this on the occasion of the purchase of the Fushun center. Peking gives us its support by keeping us informed of the purchases being considered by these two provinces; but because of the proximity of Hong Kong, bonds of kinship, and interest linked to those of the colony, the PT of Guangdong is already heavily committed to Cable & Wireless for their various projects in progress. It will therefore be difficult to get into the picture in that region.

The same is not the case in Shanghai, where the French industry still has all its chances; the PT administration of that municipality still remains under the oversight of Peking, as do the administrations of the other provinces. Out of a concern for uniformization and standardization, the interior of the country, when it modernizes in turn, will be led to follow the options decided on by the coastal cities. It is therefore of the first importance to succeed in Shanghai.

The situation is clear: one either decides to lose all the investments made in recent years and stop the expenditures, or else one decides to do everything necessary to win the game. The time has come for those responsible to make their choice. Half-measures are not worth anything; this is a decisive moment for the future. Those who are unaware of this fact and who are not interested in China today take the heavy responsibility of finding themselves isolated from a country whose population is going to increase by another 230 million in 20 years and that will have to be reckoned with more and more every day.

Ministry of PT: 11 Vice Ministers

Telecommunications come for the most part under the Ministry of Posts and Telecommunications; but certain other ministries, such as National Defense, Foreign Affairs, Water Conservancy and Power have their own networks. The Fourth Ministry of Machine Building, which is responsible for electronics and computer technology, has a network independent of that of the PT. This fact causes some difficulties and a certain anarchy; thus the PT is currently trying to obtain control of the private networks to increase its importance and organize the utilization of equipment more rationally.

The minister of PT is assisted by 11 vice ministers.

The ministry is composed of nine departments (posts, telecommunications, personnel, education, science and technology, planning and finance, external affairs, industry, materiel) and two national companies--China National P and T Sciences and Technics Corporation (which comes under the department of sciences and technology), and China National P and T Industrial Corporation (which comes under the department of industry).

At the end of 1980, the Chinese PT employed 820,000 persons, divided equally between posts and telecommunications. Furthermore, each province, municipality and autonomous region has its own administration (a total of 31).

The telecommunications industry has 152 production units; 29 of them come directly under the Ministry of PT and represent 80 percent of total production, and the others are subordinated to the provincial authorities (in Shanghai, for example, there are seven plants or shops). Some of the equipment used is produced by the Fourth Ministry of Machine Building.

Research: 4,000 Engineers and Technicians

Research employs nearly 4,000 engineers and technicians, divided among the PT scientific-research academis of Peking and Wuhan, in the Data-Transmission Scientific-Research Group of Peking, as well as in 41 national institutes.

Nearly all the provinces have their own research and development institutes.

Training is done in four higher PT institutes (Peking, Nanjing, Changchun and Xian), which have 4,500 students, and 31 secondary schools (10,800 students) at the provincial and municipality levels and 55 technical schools (4,900 students).

COMMUNICATIONS MINISTRY COLLEGIUM REVIEWS PROBLEMS

Sofia IMPULS in Bulgarian 29 Jun 82 p 1

[Article by Yordan Popov: "In the Collegium of the Ministry"]

[Text] A session of the collegium of the ministry, led by Minister Pando Vanchev, was held on 25 June. The following questions were taken up: measures for accelerated introduction of the achievements of scientific and technical progress into the sector during the Eighth Five-Year Plan; the technical state of the communications system and the quality of services in 1981; the collegium's work plan for the second half of the present year.

The trend in the development of communications worldwide is conversion to new equipment and technologies in the area of space communications, microelectronics and optoelectronics. The development of our communications system during the Eighth Five-Year Plan will proceed in the spirit of scientific and technical progress. There will be an increase in telephone density, in the automation of telephone communications, the number of interconurbation cables, the construction of international dial telephone and telegraph exchanges, the number of new radio transmitters and retransmitters, the equipment and systems for the mechanization and automation of postal process, the introduction of new technologies etc.

The collegium heard information about the technical status of the communications system and the quality of services last year. The achievements and shortcomings that were found in the work were pointed out.

Serious attention was directed to the necessity for all communications agencies to pay greater attention to the technical serviceability and proper use of departmental equipment in the spirit of the Communications Law.

The collegium's work plan for the second half of the year was discussed. It integrates the tasks springing from the decisions of the 12th Party Congress, the Ninth BCP Congress, the 14th DKMS [Dimitrov Communist Youth Union] Congress and the urgent problems which the collectives of the system must solve. Better coordination of coomon tasks with other ministries, ONS [okrug people's councils], the TsKPS [Central Committee of Trade Unions] and UPK [institution's trade-union committees] is envisaged in order to render more effective assistance in the fulfillment of this year's counterplans. Bulletins of certain OUS [expansion unknown; possibly

okrughno upravlenie na suobshteniyata, okrug communications administration] directors regarding the fulfillment of urgent okrug-scale tasks are planned.

The collegium took decisions as required on the questions discussed.

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CSO: 5500/3014

NEW TELEX SYSTEM DESCRIBED

Sofia IMPULS in Bulgarian 13 Jul 82 pp 1, 3

[Article by Engr Margarita Petkova: "The Future in Our Day"]

[Text] The building of the International Electronic Automatic Telegraph Exchange is in its concluding phase--comprehensive functional tests are being conducted, traffic programs are being inputted and tried out, and the final adaptation of the exchange to the world telex network and the checking of telegraph links to all countries of the world are being carried out.

The International Automatic Telegraph Exchange was produced by the Swedish firm--Ericsson, and was installed and tested under the guidance of Swedish specialists. With its commissioning the establishment of electronic telex communications in our country was initiated.

The exchange is an absolutely complete specialized real-time computer complex. It is controlled by powerful processors, which makes possible the satisfaction of capacity needs in the telex network for several decades to come and the introduction of a large number of new modern telex services for subscribers, as well as the entire takeover by the exchange at a modern level of billing for telex calls, sharp improvement in the quality of operations in the telegraph network and a guarantee of optimum use of communication links with the most efficient maintenance.

The new international telegraph exchange will make possible speedy and high-quality telex communications with all countries in the world, completely automatically or with the help of modern operator's positions in the International Telex Switchboard.

Services will be substantially improved in the national telex network, too. Telex subscribers from Sofia and from Blagoevgrad, Pernik, Kyustendil, Vidin, Vratsa, Lovech, Pleven and Mikhaylovgrad okrugs will go over to keyboard selection. The date and hour of the establishment of communication will be printed on their teletype machines. At the request of the subscriber it will be possible to obtain duration and charge information after a call is over and an itemized bill at the end of the month for every call that was made.

The exchange makes it possible to set up departmental telegraph networks, i.e. subscriber groups operating only among themselves within the group. This assures the

most efficient use of the switching and relay equipment of the Ministry of Communications for the needs of the other departments.

The use of remote-controlled multiplexers leading to the exchange and of digital relay systems will make possible in the future the economical establishment of the country's telegraph network and its centralized monitoring and maintenance.

The subscriber services which the exchange supplies offer innovations and great convenience: conference systems, storage and retransmission of messages, automatic duration and charge information for a call, abbreviated selection, direct callup, automatic rerouting of calls, automatic recalling, automatic information messages, closed subscriber groups.

The possibility of switching messages through the exchange, i.e. storing and retransmitting them, is provided. If the called number is busy, the subscriber can feed a telex message into the exchange and switch off. The exchange transmits the message to the desired correspondent once he becomes free and informs the calling subscriber.

In the event of intensive operation with a certain number of correspondents, the subscriber may use the abbreviated selection service, i.e., work with abbreviated addresses prestored in the exchange.

If a given subscriber has a single correspondent, he may use the direct calling service. In this case selection of the number is eliminated altogether and the exchange makes the connection at once when the call-button is pressed.

All calls intended for a given subscriber can be automatically rerouted to another number specified by him.

If a subscriber does not desire to accept messages addressed to him but is anxious to inform anybody who dials him of some text, he can use automatic information messages.

Instead of losing time redialing a busy correspondent, a subscriber can use the automatic recalling service. The exchange makes an automatic series of attempts to establish the desired connection.

The multiple-address (conference) systems, whereby one subscriber can transmit his messages simultaneously to a great number of correspondents, are a great advantage.

The International Automatic Telegraph Exchange makes possible centralized billing for the calls which pass through it. Data for every call made are recorded on magnetic disk devices and processed by processors in the billing system. At the end of the month bills are printed out for subscribers from Sofia and the country, as are also data for planning the telegraph traffic between the Ministry of Communications and the communications administrations of other countries, as well as diverse statistical traffic data necessary for optimum planning and development.

The exchange will be operated by highly skilled specialists. With monitoring, diagnostic and functional capabilities programmed into it, servicing is concentrated in a special operations room and is effected mainly with the help of a special command language by input-output devices connected to the exchange.

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CSO: 5500/3015

PAPER REACTS TO 'TRUD' CRITICISM ON POOR TELECOMMUNICATIONS

Sofia IMPULS in Bulgarian 29 Jun 82 pp 1, 3

[Article by Lyuba Anachkova based on materials from specialists Engr Tsako Runev, Engr Liliya Paskaleva, Engr Stoycho Stoykov and Kiril Iliev: "When Does Criticism Help?"; TRUD's critical remarks were published in JPRS Report No81315, 20 July 1982]

[Text] Asen Petrov Georgiey's reportage, headlined "Telephone? It's Not Very Simple," was published in issue No. 127 of 2 June 1982 of the newspaper TRUD.

We hasten to agree with this headline though we might preface it, "To write about."

The report criticizes the quality of telephone communications, the ratio between the number of available telephone stations and the traffic capacity of the equipment, interconurbation and interokrug dialing, the differences between okrugs in respect of telephone density, the type of exchange now in operation, standards for telephone equipment out of order, percentage of calls completed, and even solicitude over improvement of the supply of telephone equipment in the capital. Generally speaking, the policy of the Ministry of Communications is audited and the result is a negative sign. To what extent is all this justified?

True, there is a certain disproportion between the number of available telephone stations in the conurbations and the traffic capacity of the conurbation network. And this is quite natural for telephone communication is established in conurbations according to the capacity of their exchanges, the equipment being produced by the Bulgarian communications industry. Interconurbation dialing is effected on two levels--intraokrug automation and automation between okrug cities with expensive equipment, procured with foreign exchange from the second direction, being used for the purpose.

The ministry's 5-year program targets the construction of 500,000 new telephone stations. This is the goal set by the 12th Party Congress. Simultaneously with this construction, the relay network will be built and expanded significantly. At the last session of the collegium Minister Pando Vanchev gave instructions in addition along these lines and decisions were taken as required. The implementation of these will lead to a decrease in this undesirable disproportion.

It is an indisputable fact, however, that both telephone density and coverage for the country as a whole have tripled. The inference that this was done in the pursuit of revenues is thoroughly erroneous for the needs of the national economy and the population have grown incredibly. The author should get it straight that the Ministry of Communications has more to gain from developing the interconurbation network. This way more calls would be made, whereas a telephone station constructed in village "X" costs a great deal and takes the owner 15 to 20 years to pay for. But apart from the quest for revenues, which is not in the slightest at variance with the new economic mechanism, there is also a social program, which the author and his editor seem deliberately to have disregarded.

The "Mladost" and "Lyulin" wards in the capital are not at all "victims" of this disproportion. The new dial telephone exchanges are being built as a package, which means that the project estimates for them include all construction and installation work not only for the construction of the exchanges themselves, but also for the coupling cables and the subscriber network. All the connecting circuits with other capital exchanges, provided for in the project estimates on the basis of traffic data, would be actuated as early as they themselves are put into operation (the dial telephone exchanges in the wards in question). The observations made by specialists show that these communications are sufficient for the telephone traffic. We must, however, admit that there are still not enough circuits to conurbations in Sofia Okrug. At the moment a work project with a startup target date of 30 December 1983 is being carried out which will eliminate this anomaly.

There is the necessary number of connecting links from and to ATTs-67 (Dragalevtsi). There is an insufficient number of telephone stations there (200), but a new ATTs is being installed, which not only will increase the number thereof 10-fold, but will markedly improve the quality of telephone service.

How do matters stand with the facts, cited in the report, bearing on telephone communications in Blagoevgrad and Kurdzhali okrugs?

The Blagoevgrad OUS [expansion unknown; possibly okruzhno upravlenie na suobshteniya, okrug communications administration] director, Engr K. Georgiev, tells us that the data in question were already published once in issue No. 40 of the newspaper IMPULS on 6 October 1981. Since then, things naturally have changed. The stretch of cable from Blagoevgrad to Simitli has long since been rebalanced; 60 new channels have been put into operation over it, thus eliminating the "bottlenecks" of the relay system in the Sandanski-Petrich routing. The problem of a single-cable trunk in the Gotse Delchev-Razlog routing has been partially solved. Parts of it have been doubled and an additional 24-cable line has been created, but complete solution of the problem will not be obtained until the end of the five-year plan.

Favorable changes have also taken place in the above-cited conurbations of Kurdzhali Okrug. As for the decrease in the average use of dial telephone communications, the reason should at least be sought in the number of connecting circuits. It has its roots mainly in the incorrect conception of some economic managers of enterprises, who place restrictions on the telephone traffic from their PBX's, crippling their communications equipment for the sake of economy.

The assertion that the use of interconurbation telephone communications (manual system of operation) is low both country wide and also for Blagoevgrad Okrug is

incorrect. The average load per interconurbation telephone link (manual system) per 24-hour period nationwide is about 200 tariff-minutes, whereas international recommendations permit up to 150. The inversely proportional ratio between the indicators for the use of links and the time for completion of calls must be emphasized.

It is practically impossible within the limits of a reply to analyze the facts illustrated by the figures--no longer timely--from Blagoevgrad Okrug. Moreover, it is erroneous to criticize the ministry's endeavor to increase telephone density. There will be a difference between individual okrugs because the development of telephone communications in them depends on whether there are large industrial facilities, health resort complexes and cultural centers, i.e. on our regional economy.

A legitimate question is: "Did 1929-model exchanges have to be introduced at such a rate?" But where was another to be got when our communications industry produces only this one? The failure to master the ESK 1000 E Crosspoint type license is likewise a problem of the Ministry of Machine Building and Electronics.

For information only: an imported electronic-type of conurbation exchange for 10,000 stations costs about 20 million foreign-exchange leva.

One can, and correctly, write about "Quality--at Some Future Indefinite Time." In the case of telephone services, it is still not at the desired level and the ministry is making, and will continue to make, capital investment to improve it. However, as regards standards for faults and their interpretation in this report, we must emphasize that the interpretation not only lacks verisimilitude, it is also insulting to the specialists. The 3000 faults per 20,000 stations in one okrug are not attributable to every single day, as the author incompetently alleges ("constantly out of order"), but to the 90 days of a quarter, i.e. 33 faults per 20,000 stations in 24 hours, which is 0.16 percent.

In this conglomerate of problems there is another that merits our attention. World statistics show that in countries with the most developed establishment of telephone services only 60 out of 100 calls are completed. In Sofia this figure is 42, and not 35 percent. The trend is towards an increase, which was called in question in the pages of the newspaper. The inference that the blame lies solely with the equipment and maintenance personnel is also inaccurate. Very often the called party is absent, which appreciably lowers this percentage.

During the Eighth Five-Year Plan the Ministry of Communications will direct its efforts towards the following in order to improve quality:

1. On the basis of observation and measurement of telephone traffic, the traffic capacity of conurbation and interconurbation dial telephone exchanges, main trunks and intraokrug automation will be increased.
2. There will be an increase in the checking on the communications equipment obtained from our industry, as well as on the quality of projects handed over by the construction organization for operation.

3. New instructions and prescriptive documents are being updated and formulated regarding the maintenance and use of communications equipment as a result of the introduction of new instrumentation for the automatic testing and monitoring of equipment at dial telephone exchanges.

4. "Bottlenecks" in the technology and maintenance of telephone communications have been detected and card-indexed. In solving them, Bulgaria's advanced experience and that of other countries will be employed.

6474

CSO: 5500/3014

BULGARIA

PROBLEMS IN INSTALLATION, MAINTENANCE OF TELEPHONE LINES

Sofia IMPULS in Bulgarian 6 Jul 82 p 3

[Article: "Conurbation Telephone Communications--Problems, Suggestions"]

[Text] The construction of conurbation telephone networks has lagged significantly behind the growth in the capacity of dial telephone exchanges. Thus, at the moment there are nearly 10,000 numbers not taken in Ruse Okrug because the conurbation network needed for this purpose does not exist. This results in inefficient utilization of fixed production assets, growth in the amount of allowances for depreciation and an increase in the burden of costs, which adversely affects the fulfillment of the basic economic indicators. The reasons are most diverse. The construction of the large cable networks to ATTs [dial telephone exchange]-3 and ATTs-5 is being carried out by Isstroy SMG [Construction and Installation Group], Ruse. The expansion of the network is already several years overdue and interest in a significant amount is being paid to the BNB [Bulgarian National Bank]. In practice this is how it happens: for crash fulfillment of their volume indicator the construction men lay great quantities of cable with great capacity and of great value, but they do not at the same time complete the installation work and these are not handed over for operation. For years in a row scarce cables lie buried in the ground without operating. Thus, for a project with a total value of 1,800,000 leva, so far in more than 3 years barely 739,000 leva, or 41.06 percent, has been taken down, while the startup target date has long since passed. Of the 730,000 leva that have been taken down, only 95,000 have been invested in equipment that has been put into operation. For this reason there is free capacity of 4000 numbers at ATTs-3. At the same time a number of projects are under construction in the okrug with internal forces and resources with the APK [agroindustrial complexes] and obshtina people's councils actively helping. Even though the situation here is a little better, the construction of dial telephone exchanges is running ahead of the development of the cable network, and in a number of conurbations of the okrug there are unissued numbers. Thus, in Koshov there is free capacity of 170 numbers, in Cherven 150, in Malko Vranovo 170, in Shtruklevo 100, in Bila 300 etc. The basic thing here continues to be--institute synchronized construction of the cable network and expansion of the dial telephone exchange.

The second basic problem is efficient maintenance of the conurbation telephone network. And on this score the lack of skilled manpower, and specifically cable splicers for the most part, is felt significantly. Even though the number thereof in the

okrug exceeds 25, some have low qualifications and are used ineffectively, and the rest are qualified workers. The question of cable splicers' work clothes must perhaps be raised here--they should be suitable for the job and be warm and comfortable.

The problems in maintaining the conurbation telephone network in the okrug city are considerable. The dispatcher service that has been established registers faults and transmits them to GKM [expansion unknown; possibly glavno kontrolno myasto, main control point], and then begins the assignment among the repairmen, during which an hour or an hour and a half is lost, to say the least. Perhaps the right thing would be if a well-qualified chief dispatcher were appointed in the city cable system itself, who would assign jobs among the repairmen and mechanics and get feedback about what is done.

The reasons for the construction and maintenance of the conurbation telephone network are varied. It cannot be denied that in this regard there has been considerable progress, especially this year. A central construction staff has been established to coordinate the work between construction men and operations. Brigade members are regularly sent to help the construction men. More than 500 man-days helping the construction men have been worked; 4000 meters of coupling cable have been laid. A special program has been formulated for the development and introduction of the achievements of technical progress into communications during the Eighth Five-Year Plan. There is also considerable help from the okrug people's councils, the obshtina people's councils and the agroindustrial complexes.

The new economic mechanism and its application require a new approach to the construction and maintenance of conurbation telephone networks so that planned indicators can be rhythmically fulfilled.

6474
CSO: 5500/3014

BULGARIA

NEW TELEVISION TRANSMITTER COMMISSIONED IN APRIL 1982

Sofia IMPULS in Bulgarian 29 Jun 82 p 3

[Article by Elka Nikolova: "For Us Millions of Viewers"]

[Text] There is no other invention that has so changed people's lives as radio and television. Communication via sounds and pictures brings the most remote countries and peoples closer together.

Television towers are the bridge by means of which every transmission takes place. But few people know that a new television transmitter for the first program has been functioning in the Sofia television tower since 26 April 1982. Produced by the Japanese firm NEC [Nippon Electric Company] in 1981, it is one of the most modern television installations in the world, twice as powerful as those previously in operation. It broadcasts the television program only for the capital and Sofia Okrug. There are places that the signal cannot reach directly. Relay stations which receive the signal from the tower and emit it on another channel have been built.

"The introduction of the transmitter was inevitable," says repairman Veselin Yosifov. "Picture quality requirements have risen with the new television sets. I believe that viewers are already satisfied."

A "small" detail--the apparatus was installed without a blueprint and without the participation of Japanese specialists. A brigade of engineers and repairmen under the leadership of Engr Lyubomir Iliev and Engr Nikola Peshev took the initiative. The job was accomplished and 15,000 foreign-exchange leva alone were saved.

Do the working conditions measure up to the deserts of the staff? Twenty-four hour duty is maintained here. The problem of air-conditioning the studio is unsolved. If the temperature outside is 14°, the thermometer inside shows 29°; on summer days it reaches 38 or 39°. The apparatus heats up and its qualities are lowered. It is hardly tolerable for the people either.

No such problem exists in the studio broadcasting the second television program. From the operator's position (noise- and heat-insulated) Engr Liliya Betsinska and Stoycho Stoychev effect video and audio control. The stereophonic ultrashort-wave program "Horizon" for Sofia City and Sofia Okrug is continuously heard from here.

In its entire activity the Radio Stations and Television SP [Economic Enterprise] is implementing a new trend--the combining of the achievements of scientific and technical progress with high quality of television transmissions, so that we millions of viewers might have pleasant minutes before the screen.

6474

CSO: 5500/3014

BULGARIA

BIOGRAPHICAL DATA ON MINISTRY OF COMMUNICATIONS OFFICIAL

Sofia IMPULS in Bulgarian 6 Jul 82 p 1

[Text] On 25 June 1982 a session of the Ministry of Communications UPK [institution's trade union committee] was held. Present in addition to committee members were Vasil Vasilev, Transportation and Communications Section head in the BCP GK [City Committee], Manol Chobanov, secretary of the BCP Leninist Rayon Committee, and Sirma Georgieva, RK [Rayon Committee] instructor.

Because of his promotion to the post of deputy minister of communications, Engr Yanko Yanev was relieved as UPK secretary. His past service was highly prized by the BCP GK. The BCP RK awarded him a certificate of honor for his active party and political work.

Engr Valentin Atanasov Grozdanov, previously deputy secretary of the committee, was elected UPK secretary.

Valentin Grozdanov was born in 1932 in the village of Selanovtsi (Vratsa Okrug). He comes from a family of office workers.

In 1953 he was graduated from the Avram Stoyanov PIS [expansion unknown] and in 1964 from the Lenin VMEI [Higher Machine-Electrical Institute] as a specialist in radio, telegraph and telephone engineering.

From 1953 to 1956 he was a consultant in the Radio Administration of the Ministry of Posts, Telegraphs and Telephones. Subsequently he served consecutively in the Technical Directorate and in the Radio and Television Section of the Main Administration of Communications. From 1966 to 1976 he was chief specialist in the Radio Broadcasting and Radio Communications Section; from 1971 to 1976 he served as chief



of the Radio Communications Section of the Radio and Television Administration in the ministry. And since 1976 he has been chief radio broadcasting specialist in Operation and Maintenance of Radio and Television Systems.

He has been a BCP member since 1964. In the ministry he has been member and chairman of the institution's trade union committee, and since 1972 deputy secretary of the institution's party committee and chairman of the institution's commission for people's control.

He is chairman of the Bulgarian Federation of Radio Amateurs.

The following governmental and departmental awards have been conferred upon him: Order of Labor--gold, Medal for Services to the Bulgarian People's Army, Medal for 25 Years of Civil Defense of the Bulgarian People's Republic, Medal for 30 Years in the Bulgarian People's Army, and the Sixth Five-Year Plan Medal. He has been an outstanding employee in the ministry and holds the Badge of the Central Council of Bulgarian Trade Unions for Contribution to Technical Progress. In addition he has the following anniversary medals: 30th Anniversary of the Socialist Revolution in Bulgaria, Centenary of Bulgaria's Liberation from Ottoman Bondage, 100 Years of Bulgarian Communications, and Bulgaria's 1300th Anniversary.

6474

CSO: 5500/3014

EGYPT

MICROWAVE NETWORK FOR SINAI

Cairo AL-AHRAM in Arabic 7 Jul 82 p 8

[Article: "Minister of Transport and Communications Announces New Microwave Stations in Sinai and Addition of Telephone Lines in al-'Arish and Rafah"]

[Text] Engineer Sulayman Mitwalli, minister of transport and communications announced that a survey of Sinai to determine the locations for building the new microwave stations has been completed. These stations will serve telephone communications in al-'Awjah, al-Hasanah, al-Qasimah, Bi'r Jafjafah in North Sinai, St Catherine, Fabran Valley, Bala'im, Abu Rudays, Abu Zanimah and Ra's Sadar.

Following the meeting he held yesterday to review operations on communications, roads and passenger services projects in Sinai, the minister added that 500 lines will be added to the present telephone exchange of al-'Arish. In addition, the new location for the al-'Arish exchange will be determined. An automatic exchange with a capacity of 240 lines has also been established in Rafah, and a small exchange with a capacity of 50 lines has been installed in al-Shaykh Zuwayd.

The minister said that a microwave connection has been executed in Sharm al-Shaykh and that it will make 24 communications circuits available between Sharm al-Shaykh, al-Tur and Cairo. He said that an automatic exchange with 240 lines has also been installed and that the telephone commission will distribute the vacant lines there.

He said that in addition to the existing exchange of 100 lines, an automatic exchange of 240 lines will be installed in the city of al-Tur within 1 week, and telegraph communications will become available between Cairo, St Catherine and Dahab.

Engineer Ahmad Kamil, director of the Telecommunications Agency stated that a solicitation of bids has been announced for the construction of buildings and the installation of towers for the new microwave stations in north Sinai, in Rafah, Baluzah, Bir al-'Abd, al-Mazar, al-Qantarah, Ismailia and Ra's Gharib.

8592
CSO: 4504/394

SUDAN

BRIEFS

TELECOMMUNICATIONS PROJECT--International companies from Japan, the Netherlands, France and the FRG have agreed to contribute to a 9-year project to improve telecommunications in the Sudan. The cost of the program will be \$850 million. SUNA reports that the government is currently contacting friendly states to seek financing for the project. [EA260056 Omdurman Domestic Service in Arabic 1700 GMT 25 Jul 82]

CSO: 5500/5014

ANGOLA

BRIEFS

KUANDO-KUBANGO AUTOMATIC TELEPHONES--The arrival in Menongue of a team of Angolan and Japanese technicians is awaited shortly to install an automatic telephone and telex network. It should be noted that this province has been registering various difficulties in this field, caused partly by the shortage of qualified personnel, transportation means and equipment, as well as by constant blackouts and by a lack of interest on the part of the central administrative organs in this sector. For instance, the lack of transportation has caused long delays in mail receipts. [Text] [Luanda JORNAL DE ANGOLA in Portuguese 29 Jul 82 p 3]

CSO: 5500/5884

DENMARK/GREENLAND

SIXTH EARTH STATION APPROVED FOR INUKSAT NET IN 1984

Godthaab GRONLANDSPOSTEN in Danish 14 Jul 82 p 21

[Article by Peder: "Ammassalik Into INUKSAT in 1984"]

[Text] Earth station for satellite telephone will give many advantages and substantially increased capacity.

Telephone subscribers in Ammassalik will have better quality in their conversations with the rest of the country, and there will also be capacity for installing more telephones in the town, when a new INUKSAT earth station is placed in service near the start of 1984. The Folketing Finance Committee has just given the green light for Ammassalik to be connected to the tele-satellite system INUKSAT.

Previously Ammassalik has been connected to the telephone system with the rest of the country via the American military DEW line across the inland ice.

The quality of that connection is not, however, entirely satisfactory, and the system does not have the capacity to accomodate all those who desire to have telephones in Ammassalik.

Will Be Leased

The new earth station which will be placed at Ammassalik will not be purchased, but will be leased under a special leasing system, which means that with the rental amount Greenland's Telecommunication Administration is "buying" security, so that the system is continuously maintained and given the necessary service and inspections.

The amount of rent for the station will be 2.8 million kroner per year, but the amount now being paid for the DEW line connection will be subtracted from that.

Accordingly the annual expense will be reduced to 1.6 million, and that amount is expected to be fully covered by savings with the new system and an expected increase in income due to the increased number of conversations which can go between Ammassalik and the rest of the country via INUKSAT.

Station Number 6

The INUKSAT station at Ammassalik will be the sixth of its kind in the country.

At the moment there are four stations in use: Upernivik, Illoqqortoormiut, Aasiaat and Nuuk. Number five is expected to be placed in service at Qaanaaq at the start of 1983.

At the start of 1982 there were 195 telephone subscribers in Ammassalik. A substantial increase in that number is expected in the next couple of years, and this increase can not be handled by the DEW line connection alone, according to the Greenland Telecommunication Administration.

9287
CSO: 5500/2313

LARGEST CITIES TO GET DX100 DIGITAL PHONE EXCHANGES BY 1987

Helsinki HELSINGIN SANOMAT in Finnish 30 Jun 82 p 12

[Article: "Telephone Traffic to be More Reliable: Digital Technology to the Largest Cities in 1987"]

[Text] Jyvaskyla (HS)--A modern long-distance telephone exchange was dedicated last Tuesday in Jyvaskyla. It is the second of five DX-100 exchanges ordered by the Central Board of Posts and Telecommunications. The first was installed a year ago in Lahti. The next ones will be built in Oulu, Kouvola, and Rovaniemi.

The postal and telecommunications establishment is specifically digitizing its long-distance network during this decade. About half of the long-distance connections will have been joined to digital exchanges by the end of 1987. This will also include the largest cities, among others, by that time.

The DX100 is a digital exchange system in which voice signals are transmitted coded into numeric form. Control takes place through programmable processors.

Chief director V. A. Johansson said that one of the most important reasons for the shift to digital technology is that this technology and computer control make it possible to provide more service than before.

Chief director Johansson estimated that the most important phases of the digitization of local telephone networks will take place in the 1990's. The local netowrk in Korppoo has already been digitized, and work is in progress in Kangasniemi and Pielavesi. During the year 1984 local telephone subscribers in Kouvola and Kuusankoski will be joined to digital exchanges.

The telephone user himself will hardly notice the new technology, which serves to insure successful calls. If a call is interrupted or otherwise disturbed, DX100 immediately tells where the problem is. It will also make possible billing of individual calls, so that a subscriber will know where to, when, and for how long calls were made from his phone and how much each call cost.

The long-distance exchange was built by Telenokia Inc. According to its general manager, Sakari Salminen, the order placed four years ago by the postal and telecommunications establishment initiated the production of large digital exchanges in Finland.

FRANCE

BRIEFS

MOROCCO-CIT ALCATEL CONTRACT--CIT-Alcatel has just received three orders with a total value of Fr 85 million for supplying new central telephone exchanges to Malta, Sri Lanka and Morocco--countries that have already chosen the E-10 system. Malta, which has had an E-10 temporal network since 1975, has ordered an additional 16,000 lines and an extension of the cable network. Sri Lanka, where the system was installed last year, will receive a second central exchange with 21,000 lines, expandable to 45,000, to serve the new administrative center of Kotte and the southern outskirts of Colombo. In Morocco, where Fez has been equipped with an E-10 since 1975, Tangiers will receive a central exchange with 12,000 lines, expandable to 45,000. [Text] [Paris ELECTRONIQUE ACTUALITES in French 28 May 82 p 10] 11267

THOMSON TELEPHONE LINES IN MIDEAST--At the conclusion of an international consultation, Thomson-CSF [General Radio Co] has been chosen to build the "Medarabtel" radio-transmission network designed to provide telephone, television and telex communications among Saudi Arabia, the Yemen Arab Republic, the People's Democratic Republic of Yemen, the Republic of Djibouti, and Somalia. The project, which totals \$18 million (or about Fr 108 million), is being financed by the Arab Economic and Social Development Fund (FADES). The Medarabtel network will be built for "turnkey" delivery by Thomson-CSF (radio equipment, pylons and antennas, buildings, shelters and energy), with the participation of the Italian company Telettra, which will supply 2-GHz radio equipment and the multiplex buildings. The new radio equipment from Thomson-CSF, of the 6-GHz 250 type (960 telephone channels plus 1 TV channel) and with low power consumption, will make it possible to use solar-energy power supply in many stations. [Text] [Paris ELECTRONIQUE ACTUALITES in French 11 Jun 82 p 9] 11267

EQUIPMENT FOR TELECOM-1--The DGT [General Telecommunications Directorate] has just awarded to Telspace a series framework contract relating to the supplying of intercompany stations and ground-station equipment for the Telecom-1 program. The first order involves the supplying of 50 stations that will be made available to the administration in the course of 1983. The contract follows upon the building of four prototype intercompany stations by Telspace, which is a GIE [Economic Interest Group] formed by Thomson-CSF and CIT-Alcatel. [Text] [Paris ELECTRONIQUE ACTUALITES in French 25 Jun 82 p 12] 11267

AEROSPACE COOPERATION WITH INDONESIANS--A new group--the Franco-Indonesienne d'Equipement Aeronautiques---has just been formed by 19 French companies be-

longing to the CIFAS [expansion unknown] equipment group. The objective of this group is to develop technical cooperation among the French builders of aerospace equipment, the official services and the Indonesian industrialists. The FIEA [Franco-Indonesian Aeronautical Equipment Group] will be chaired by Mr Guibe, president and general manager of Messier Hispano Bugatti. [Text] [Paris ELECTRONIQUE ACTUALITES in French 4 Jun 82 p 8] 11267

TELEPHONE TECHNOLOGY TRANSFER--Paris--The Barre government, which in 1979 authorized a contract between Thomson and the USSR for a telephone exchange manufacturing plant, had not evaluated correctly its international commitments at that time, according to present government circles. This contract, totaling 750 million francs, is now to be reviewed. The USSR, a major client of France in the realm of data processing, is especially interested in gaining access to the technology of the components and of the computers involved in the fabrication of telephone exchanges. The contract for this plant, which is to produce 1 million lines per year, involves the granting of licenses, the transfer of technology, engineering and technical assistance. Inasmuch as this contract presents "aspects not in accordance with France's international commitments," a Ministry of Industry communique indicates, the Mauroy government has "had to open negotiations with the Soviets to introduce several modifications into the project." These negotiations are under way." The Ministry further states that the technologies involved in this contract are of French origin. [Text] [Paris AFP SCIENCES in French 3 Jun 82 p 3] 9399

CSO: 5500/2293

NORWAY

TELECOMMUNICATIONS AGENCY DIRECTOR DISCUSSES TRENDS, PLANS

Oslo AFTENPOSTEN in Norwegian 18 Jun 82 p 25

[Text] The telephone waiting list will be gone in 1985, and will be under 65,000 this year.

The Telecommunications Agency's profits will total 405 million Kroner.

The Telecommunications Agency's self financing is approaching 50 percent.

Total productivity increased by 4.5 percent last year.

These were some of the highlights Kjell Holler, Director of the Telecommunication Agency, pointed out during the 1981 Annual Report presentation Thursday. Holler also noted that the Telecommunications Agency wishes to build an experimental site for cable TV in Trondheim. The Agency will follow up on the government's recommendation that foreign companies should have the opportunity to bid on its contracts.

Better productivity and lower than expected price increases led to a 127 million Kroner surplus for the Telecommunications Agency after a deficit of 200 million Kroner the previous year. The strong emphasis on expansion of the telephone network from the end of the 1970's, according to the Board of Directors, is beginning to show results.

"If we had obtained a similar prioritization in the beginning of the 1970's we would not have had a waiting list today," stated Holler.

97,000 Telephones Installed

During the last four years there has been a quadrupling of new subscribers. The net increase last year was about 97,000, while in 1978 the number was 46,000, so that the number of telephones in use in Norway increased from 45.2 units per 100 residents in 1980 to 48.5 units per 100 residents last year.

"We plan to complete the automation of the telephone network in 1985. This is a very expensive expansion, even though it will only affect 1.4 percent of

our customers. In the four-year period from 1983 through 1986 the Telecommunications Agency will pay out about 170 million Kroner in severance pay to those who will lose jobs due to the automation," Holler pointed out.

The Telecommunications Agency is planning a greater degree of self-financing for future expansion. In 1981 we invested about 2.5 million Kroner, and 33 percent of this was self-financed. In 1982 we should approach about 46 percent self-financing, compared to 21 percent five years ago. We are watching the reaction among the politicians, but our long-term goal is to achieve the same arrangement as they have in Denmark and Sweden, where there is 100 percent self-financing.

Puzzled

Holler was puzzled by the debate surrounding the Telecommunications Agency's economic situation. "It is unproductive to debate such situations because the Telecommunications Agency operates with an interest ceiling of six percent on loan capital from the State," he remarked.

"I will be happy to sign an agreement with the Minister of Finance changing the interest we pay on loans to 11 percent, if at the same time we are allowed to retain the money we now pay to the Treasury," Holler stated.

It was additionally pointed out that by the end of 1985 a new billing system will be ready for Oslo and Bergen, enabling the Telecommunications Agency to avoid the large loss of interest they have today due to the long delay in sending out telephone bills. This amounted to 4.6 billion Kroner in 1981.

The Annual Report further stated that the Telecommunications Agency is planning to build an experimental site for cable TV in Trondheim. In cooperations with the Trondheim Newspaper Association they plan to send Swedish radio and television programs via cable to customers.

"We are not going to become involved in the wide spectrum of cable TV activities and joint antenna operations. The Telecommunications Agency must however, be involved in experimental activity to gain necessary expertise. Cable TV will be a part of the future integrated telecommunications network and will be the center of technical development over the long run."

"If we do not gain this expertise we will be poor advisors to government officials on a very central issue," Holler said.

The Telecommunications Agency's leadership will follow up on the lead given by the government, recommending that foreign companies be permitted to bid on contracts when the Telecommunications Agency continues its expansion.

"The Board of Directors had earlier organized a clear break with our earlier policy by working towards increased competition between the two Norwegian suppliers of telephone equipment, STK and Elektrisk Bureau. We have previously purchased equipment from both concerns," Holler said.

Professionals

Holler also lamented the loss of many professionals from key positions. He said that this could not continue, but hoped that new wage agreements permitting the signing of special contracts could stop the flight of professionals.

Total productivity increased by 4.5 percent, the highest increase up to now. If you calculate productivity as production per worker, it has increased from between nine and ten percent during the past year [as published].

The Telecommunications Agency is also satisfied with the new Nordic mobile telephone (NMT). The increase in total customers has exceeded expectations, resulting in some capacity problems. There are presently 5,400 NMT customers, compared to 1,670 in February. There are just as many customers today as expected at the end of 1981.

9984
CSO: 5500/2290

NORWAY

COUNTRY'S FIRST CABLE TELEVISION SOON TO START IN OSLO

Oslo DAGBLADET in Norwegian 6 Jul 82 p 4

[Text] 15-20 minutes of local news and 40-45 minutes of reporting from local entertainment and sports programs--this is about the way the weekly hour of local TV from Janco-Visjon A/S will look when it is offered to about 75,000 households in Oslo beginning 1 September.

Eight Oslo newspapers will provide the substance of the news input on the local TV. In the first program all eight will present the layout, and in the following programs each individual newspaper will in turn have the responsibility for the local TV news.

The producer for the different program offerings will be Janco-Visjon A/S, and the company has hired two experienced media people: Jan Borg and Jan Akerjordet. The first has background from NTB [Norwegian Telegram Bureau] among others, and as a freelancer has sent TV inputs to a number of countries; the other has a long affiliation with NRK [Norwegian Broadcasting]. The newspapers will also utilize these two in part for program production.

Editorial responsibility for the local channel will be held by Jan Lindh at Janco-Visjon A/S. DAGBLADET has learned that the company will temporarily not operate with a budget for the 18-week test period, but that it will surely cost "several hundred thousand."

Expenses will be borne by Janco-Visjon A/S and the eight newspapers. Households connected to Janco's combined antennas will not be charged for the extra TV offering. The company says that they hope to be able to continue local broadcasting in 1983, but that they are dependent on financing--which probably only means public grants or advertising income.

To the question of whether Janco-Vision A/S has received many inquiries from groups who want to participate in the coming broadcasts, the reply was that a number of organizations, both ideal and religious, have shown great interest. Likewise "known names" among actors and educators have called the

cable company and offered their services, and expressed hope for success for the entire project. "We certainly have many, many friends," they said at Janco-Visjon A/S.

The first program will go "on the air" or "on cable" on 1 September. It will also be repeated once for the next week's broadcast. The company said that the program offering can be expanded during the test period, but that they want to have some experience first.

9287

CSO: 5500/2307

END